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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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*Ex parte* ASHOK N. RUDRAPATNA and NARESH SHARMA

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Appeal 2009-004436  
Application 09/967,009  
Technology Center 2100

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Decided: September 30, 2009

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Before MAHSHID D. SAADAT, KARL D. EASTHOM,  
and ELENI MANTIS MERCADER, *Administrative Patent Judges*.

SAADAT, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellants appeal under 35 U.S.C. § 134(a) from a Final Rejection of claims 1, 3, 4, and 7-9. Claims 10-21 have been allowed and claims 5 and 6 have been objected to by the Examiner for being dependent on a rejected claim. We have jurisdiction under 35 U.S.C. § 6(b).

We affirm.

## STATEMENT OF THE CASE

Appellants' invention relates to a communication system using Hybrid Automatic Repeat Request (HARQ) technique in a multiple antenna system (Spec. 1:6-8) to confirm that the information transmitted has been received without any errors (Spec. 2:10-13). According to Appellants, reliance on a single error coded stream of bits in multiple antenna systems limits the throughput increases using known re-transmitting techniques, such as HARQ (Spec. 4:10-12). Therefore, in a multiple antenna system, a re-transmitting technique where multiple streams of information may be transmitted simultaneously increases the throughput in a wireless communication system (Spec. 4:12-15). Claim 1, which is illustrative of the claimed invention, reads as follows:

1. A method of processing a block of information, the method comprising:

forming at least two error control coded streams, using a separate error code encoder for each stream, from the block of information, the formed at least two error control coded streams being transmitted in response to a confirmation message, wherein a first error control coded stream of the at least two error control coded streams is independently transmitted by a first antenna of a multiple antenna system and a second error control coded stream of the at least two error control coded streams is independently transmitted by a second antenna of the multiple antenna system.

The Examiner relies on the following prior art reference:

Kenney

US 6,771,705 B2

Aug. 3, 2004  
(filed Feb. 1, 2001)

Claims 1, 3, 4, and 7-9 stand rejected under 35 U.S.C. § 102(e) as being anticipated by Kenney.<sup>1</sup>

We refer to the Brief (filed Nov. 27, 2007) and the Answer (mailed Mar. 25, 2008) for the details of the arguments made by Appellants and the Examiner. Only those arguments actually made by Appellants have been considered in this decision. Arguments that Appellants did not make in the Brief have not been considered and are deemed to be waived. *See* 37 C.F.R. § 41.37(c)(1)(vii).

### ISSUE

With respect to claim 1, Appellants contend that Kenney does not disclose forming “at least two error control coded streams, using a separate error code encoder for each stream” because the streams transmitted by the antennas 113 and 114 both include data encoded by the two encoders 201 and 204 (Br. 6). Appellants further assert that each antenna in Kenney transmits a data stream formed by combining data encoded by multiple encoders, instead of independently transmitting each of the first and second streams by the first and second antennas, respectively (*id.*). Therefore, Appellants’ arguments present the following issue:

Have Appellants shown that the Examiner erred in rejecting claim 1 under 35 U.S.C. § 102(e) by finding that Kenney teaches (1) “forming at least two error control coded streams, using a separate error code encoder for each stream” and (2) that the first error control coded stream is

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<sup>1</sup> The final rejection of claims 10-21 under 35 U.S.C. § 112, second paragraph, was overcome by Appellants’ amendment to claim 10, filed Nov. 9, 2006, which was acknowledged by the Examiner in an advisory action mailed Dec. 19, 2006.

independently transmitted by a first antenna and the second error control coded stream is independently transmitted by a second antenna?

### FINDINGS OF FACT

The following findings of fact (FF) are relevant to the issue involved in the appeal:

1. As depicted in Figure 2 and 3, Kenney discloses turbo-encoding having content transmit diversity for transmission over a space-time spreading system within base station transmitter controller 111, which includes a turbo-encoder 200 and antenna processors 210 and 211. (Col. 3, ll. 13-23, col. 3, l. 62 – col. 4, l. 2.)

2. Kenney discloses that turbo-encoder 200 receives systematic data and passes the received data to a first encoder 201, which generates parity data from the systematic data which is then passed to demultiplexer and puncture unit 202. (Col. 4, ll. 16-23.)

3. The received systematic data is also interleaved within interleaver 203, and passed to a second encoder 204 which generates parity information for the interleaved systematic data, which is then passed to a demultiplexer and puncture unit 205. (Col. 4, ll. 29-38.)

4. Kenney discloses that only a selected subset of parity data generated from the non-interleaved systematic data by encoder 201 and a selected subset of parity data generated from the interleaved systematic data by encoder 204 are combined with the systematic data for transmission on a given channel. (Col. 4, ll. 61-67.)

5. Kenney discloses that parity data subset 1 (generated from the non-interleaved systematic data) and parity data subset 3 (generated from the

interleaved systematic data) are concatenated, together with the non-interleaved systematic data, by multiplexer 206 for transmission over one channel (i.e., via antenna 113). (Col. 5, ll. 1-6.)

6. Kenney further teaches that parity data subset 2 (generated from the non-interleaved systematic data but different from parity data subset 1) and parity data subset 4 (generated from the interleaved systematic data but different from parity data subset 3) are concatenated with the interleaved systematic data by multiplexer 207 for transmission over the second channel (i.e., via antenna 114). (Col. 5, ll. 16-23.)

7. Kenney discloses that antenna processor 210 combines the concatenated codes received from multiplexer 206 with a first code division multiple access (CDMA) code and passes the result for transmission on antenna 113, while antenna processor 211 combines the concatenated codes received from multiplexer 207 with a second CDMA code and passes the result for transmission on antenna 114. (Col. 5, ll. 29-39.)

#### PRINCIPLES OF LAW

In rejecting claims under 35 U.S.C. § 102, “[a] single prior art reference that discloses, either expressly or inherently, each limitation of a claim invalidates that claim by anticipation.” *Perricone v. Medicis Pharmaceutical Corp.*, 432 F.3d 1368, 1375-76 (Fed. Cir. 2005) (citing *Minn. Mining & Mfg. Co. v. Johnson & Johnson Orthopaedics, Inc.*, 976 F.2d 1559, 1565 (Fed. Cir. 1992)); *see also In re Paulsen*, 30 F.3d 1475, 1478-79 (Fed. Cir. 1994). “Anticipation of a patent claim requires a finding that the claim at issue ‘reads on’ a prior art reference.” *Atlas Powder Co. v.*

*IRECO, Inc.*, 190 F.3d 1342, 1346 (Fed. Cir. 1999) (quoting *Titanium Metals Corp. of Am. v. Banner*, 778 F.2d 775, 781 (Fed. Cir. 1985)).

## ANALYSIS

The Examiner points out (Ans. 4) that Appellants' position was apparently to identify the entire data generated by both encoders 201 and 204 as each of the first and second streams. The Examiner explains that, unlike Appellants' position, the rejection is, in fact, based on identifying the first stream only as the parity subset data 1 that reaches the first antenna and the second stream only as the parity subset data 4 that reaches the second antenna (Ans. 4).

Upon reviewing the disclosure of Kenney, we find that the Examiner's position with respect to Kenney's forming two error control coded streams using separate encoders is reasonable. Kenney provides non-interleaved systematic data to the first encoder 201 (FF 1-2) whereas the interleaved systematic data is sent to the second encoder 204 (FF 1, 3). The punctured parity data created by the demultiplexer and puncture units 202 and 205 include parity data subset 1 and parity data subset 4 that are sent to their corresponding multiplexers 206 and 207 to be concatenated with the non-interleaved or interleaved systematic data (FF 4-6). Therefore, the two error control coded streams, in the form of parity data subset 1 and parity data subset 4, are formed using separate error code encoders 210 and 204.

Additionally, the Examiner finds that the parity subsets 2 and 3, which are generated by the encoders 210 and 204 respectively, are different from the parity data subsets 1 and 4 because they are punctured in a complementary manner resulting in unique parity data subsets (Ans. 4). The

Examiner concludes that because the subsets 1 and 4 define unique subsets due to complementary puncturing, the codes received in each of the antennas 113 and 114 are transmitted independently of the other antenna (Ans. 4-5).

We, again, agree with the Examiner's position. Initially, we note that each antenna does independently transmit the received stream because the antennas are different and receive different streams processed by different processors (*See* Figure 2 of Kenney). We specifically find that Kenney discloses that while the parity subset 2 is generated from the non-interleaved systematic data, subset 2 is different from subset 1 (FF 6). Similarly, we find that the parity data subsets 3 and 4 are different although they are generated from the interleaved systematic data (FF 6). Additionally, we find that the antenna processors 210 and 211 use different CDMA codes to combine the concatenated codes received from multiplexers 206 and 207 to pass to their respective antennas 113 and 114 (FF 7). Therefore, each antenna independently transmits one of the coded streams.

## CONCLUSION

Based on the findings of fact and the analysis above, we conclude that with respect to independent claim 1, Appellants have not shown error in the Examiner's finding that Kenney teaches the claimed (1) "forming at least two error control coded streams, using a separate error code encoder for each stream" and (2) that the first error control coded stream is independently transmitted by a first antenna and the second error control coded stream is independently transmitted by a second antenna. Accordingly, we sustain the 35 U.S.C. § 102(e) rejection of claim 1, as well as claims 3, 4, and 7-9, which fall with their base claim as they were not argued separately (Br. 6).

ORDER

The decision of the Examiner to reject claims 1, 3, 4, and 7-9 is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv).

AFFIRMED

gvw

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